A simple moving boundary scheme for depth-integrated equation models

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Abstract. A moving boundary technique is developed to investigate wave run-up and run-down with depth-integrated equations. In this paper, the fully nonlinear, weakly dispersive equations are solved using a high-order finite difference scheme. An eddy viscosity breaking wave model is adopted in order to investigate breaking wave run-up. Both conceptually simple and easy to code, the moving boundary technique utilizes linear extrapolation through the wet-dry boundary into the dry region. Nonbreaking and breaking solitary wave run-up is accurately predicted, yielding a validation of both the breaking parameterization and the run-up technique. Two-dimensional wave run-up in a parabolic basin and around a conical island is investigated, and agreement with published data is excellent.

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